



THANKS

感谢对弗拉迪（宁波）机器人有限公司的关注与信任

我们专业提供高质量的焊接机器人和服务

亟待成为您最优秀的合作伙伴

期待您的阅览和回复

Thank you for your concern and trust in FLASTEED (NINGBO) ROBOT CO., LTD.
We professionally provide high quality welding robot and service
and expect to become your excellent partner
Looking forward to your review and reply

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Songlan Avenue, Dandong Street, Xiangshan County, Ningbo City, Zhejiang Province



FLASTEED
(NINGBO)
ROBOT CO., LTD

专注焊接应用的
协作机器人研究制造企业

A collaborative robot research and manufacturing
enterprise focusing on welding applications



ABOUT FLASTEED

关于弗拉迪

弗拉迪（宁波）机器人有限公司位于宁波象山中国机械研究院南方中心，是一家专注焊接应用的协作机器人研究制造企业。国内首家推出以协作机器人为载体的焊接机器人，以安全、易于编程、快速移动的产品优势成为制造企业最好的帮手，广泛应用于汽车制造、轨道交通、家用电器、航天航空、仪器仪表等行业的精密焊接制造。

人才兴企，铸就品牌。

公司拥有一大批国内外知名协作机器人软硬件研究科学家和资深焊接工程师，并与中机南方中心百余名博士硕士进行全方位的项目合作，在焊接协作机器人控制、焊接工艺软件包、协作机器人路径规划以及超声波焊缝在线检测等多项技术领域不断深入研究，取得多项发明专利和国家科技成果奖。

鼎定品质，架构盛景。

依托中机南方中心世界一流的检测实验室和中试车间，完成弗拉迪焊接机器人各项技术设计指标验证，并透过公司贯彻TQM全员质量管理及严格执行ISO9001质量管理体系，确保制造过程每一个环节可控，带给客户最好的产品体验。

真诚携手，共赢同享。

弗拉迪（宁波）机器人有限公司愿与您携手共进，开创美好未来！



The Flasteed

Flasteed (Ningbo) Robot Co.,Ltd is located in the South Center of China Machinery Research Institute, Ningbo Xiangshan, is a collaborative robot research and manufacturing enterprise focusing on welding applications. It is the first welding robot in China to launch a collaborative robot as the carrier. With the advantages of safety,easy programming and fast moving, it has become the best helper of manufacturing enterprises. It is widely used in precision welding of automobile manufacturing and rail transport, household appliances,aerospace, instruments and meters and other industries.

Prospering with talent, Building great brand.

Our company owns a large number of well-known collaborative robot hardware and software research scientists and senior welding engineerings at home and abroad.We are cooperating comprehensively with more than a hundred Ph.Ds and Masters from South Center of China National Machinery Research Institue. Now we have obtained a number of invention patents and national science and technology achivement awards, and get further research results in the fields of welding collaborative robot control,welding software package, collaborative robot path planning and online detection of ultrasonic welding.

Superior quality , Creating brilliancy

Relying on the world-class testing laboratory and pilot workshop of China National Machinery Center, we complete the technical design index verification of FLASTEED welding robot. Through the company's implementation of TQM quality management and strict implementation of ISO9001 quality management system, we ensure that every link of the manufacturing process is controllable, and bring the best product experience to customers.

Sincere hand in hand, Win-win share.

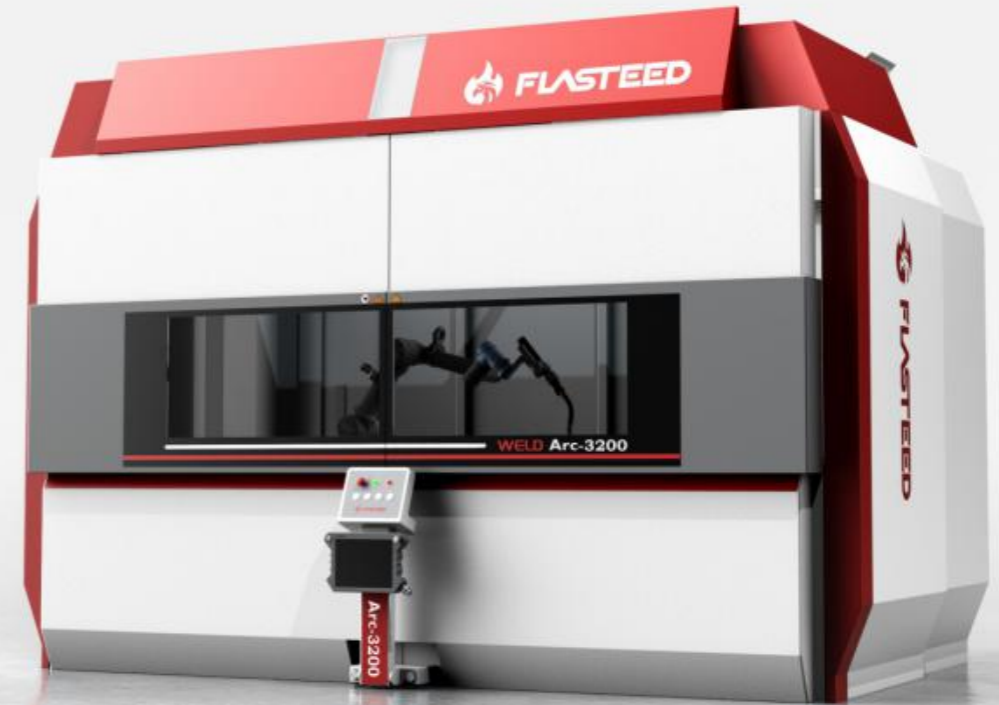
Flasteed (Ningbo) Robot Co., LTD. is willing to work together with you to create a bright future!



■ 公司一角 / Company corner



■ 公司一角 / Company corner



FLD LASER/ FLD ARC WELD 3200

双工位协作焊接机器人机床

此焊接机床为多功能双工位协作机器人自动焊接平台
This welding machine is a multifunctional automatic welding platform for double station collaborative robot

产品特点

Product Features

- 1.可配备激光焊接电源和mig/mag弧焊电源来实现激光焊接和mig/mag弧焊。
 - 2.可选用不同功率的焊接电源对不同厚度的铜铝等各种有色金属进行焊接。
 - 3.可通过双工位自动切换、单双工位随意组合，完成大小部件灵活焊接，变形量极少。
 - 4.通过焊枪上按钮，拖曳焊接进行编程，操作简易，轻松上手。
 - 5.全覆盖包围结构及上下遮光机构设计，自动挡光，避免弧光灼伤。
 - 6.高效精密焊接，焊缝平滑美观。
1. It can be equipped with laser welding power supply and mig/mag arc welding power supply to realize laser welding and mig/mag arc welding.
 2. Welding sources with different power can be used to weld different thickness copper,aluminum and other nonferrous metals.
 3. By auto switching between double stations and random combination between single and double stations,it can operate flexible welding for big and small parts with very little deformation.
 4. Using the button on the welding gun, drag welding programming,it is very easy to operate and start work.
 5. Full coverage surrounding structure and upper and lower shading mechanism design, automatic light blocking, avoid arc burn.
 6. Efficient and precision welding, smooth and beautiful weld seam.

应用领域

Applications

- 家用电器 / Household Appliances
- 汽车制造 / Automobile Manufacturing
- 航天航空 / Aerospace
- 仪器仪表 / Instrument And Meter
- 包装行业的各种金属部件焊接 / Welding packaging industry
- 健身器材 / Fitness Equipment
- 造船 / Shipbuilding
- 机车 / Locomotive
- 建筑 / Architecture of various metal parts in

技术参数

Technical Parameters

轴数据 / Axial data

型号 / Type number	FLASTEED-i5
轴数量 / Axis quantity	6
作业范围 / Scope of operation	1350mm
重复精度 / Repetition accuracy	+/-0.03mm

焊接电源 / Welding source

型号 / Type number	固体激光器(solid laser)/ mig,mag350
功率 / Power	1000-3000w/ 3A-350A

尺寸和重量 / Dimension and weight

机床尺寸 / Machine tool	4000mm*2800mm*2700mm
工作台尺寸 / Working table	2000mm*1000mm*1020mm
重量 / Weight	3700kg

加工空间 / Processing space

最大焊接工件尺寸 / Maximum welding parts dimension	1800mm*800mm*300mm
--------------------------------------------	--------------------



FLD LASER/ FLD ARC WELD 1000

协作焊接机器人机床

该协作机器人焊接平台是一台操作简单的自动化焊接机床
The collaborative robot welding platform is an automatic welding machine tool with simple operation

产品特点

Product Features

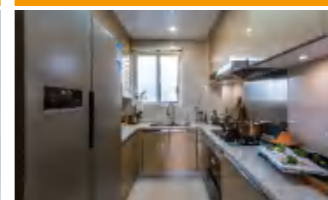
- 1.以协作机器人为作业载体，搭载先进的光纤激光电源或pulse mig/mag弧焊电源。
 - 2.通过焊枪上按钮，拖曳焊接进行编程，并集成快装焊接平台，安全，轻松上手。
 - 3.能完成大多数中薄板金属材料焊缝的焊接。
 - 4.为中小企业量身打造，企业降本提质的最佳利器。
1. With collaborative robot as the carrier, equipped with advanced fiber laser power supply or pulse low splash mig/mag arc welding power supply.
2. Using the button on the welding gun, drag welding for programming, and integrated quick installation welding platform safe easy to use.
3 It can process most of the seam welding of medium and thin metal plate.
4. Tailored for small and medium-sized enterprises, the best tool to reduce cost and improve quality.



应用领域

Applications

- 汽车零部件制造行业 • Auto Parts
- 家用电器制造行业 • Household Appliances
- 航天航空制造领域 • Aerospace
- 建筑五金行业领域 • Building Hardware



技术参数

Technical Parameters

轴 数 据 / Axial data	
型 号 / Type number	FLASTEED-i5
轴 数 量 / Axis quantity	6
作业范围 / Working range	1350mm
重复精度 / Repetition accuracy	+/-0.03mm

焊接电源 / Welding source	
型 号 / Type number	固体激光器(solid laser)/ mig,mag350
功 率 / Power	1000-3000w/ 3A-350A

尺寸和重量 / Dimension and weight	
机床尺寸 / Machine tool	1450mm*970mm*830mm
重 量 / Weight	350kg



应用领域 Applications

- 家用电器 / Household Appliances
- 汽车制造 / Automobile Manufacturing
- 航天航空 / Aerospace
- 仪器仪表 / Instrument And Meter
- 健身器材等的各种金属零部件的精密焊接
Precision welding of various metal parts of fitness equipment

FLD LASER/FLD ARC WELD 500 协作焊接机器人

这是一台移动焊接协作机器人单元
This is a mobile welding collaborative robot unit

产品特点 Product features

- 1.可配合外部轴结构形成焊接站，也可以配合变位机组成多面复杂焊接生产线。
 - 2.可通过切换激光或mig/mag弧焊电源完成精密焊接。
 - 3.灵活移动脚轮设计，可快速布局多种应用场景，特别适合小批量产品焊接。
 - 4.以协作机器人为载体，通过拖动编程，操作简单，上手快。
 - 5.选用大小功率的激光或mig/mag弧焊电源焊接不同厚度的铜铝等有色金属。
 - 6.配备一流的激光焊接电源，精密焊接，变形量小，焊缝美观。
1. It can combine with outside axle construction to form a welding station, and it can also combine with positioner unit to be a multifaceted complex production line.
 2. Precision welding can be effected by switching laser or mig/mag arc welding power supply.
 3. The flexible castor design can quickly layout a variety of application scenarios, especially suitable for small batch product welding.
 4. Take the collaborative robot as the carrier, through drag programming, it can operate easily and start work quickly.
 5. Use high or lower power or mig/mag welding to weld copper, aluminum and other non-ferrous metals in different thickness.
 6. Equipped with first-class laser welding power supply, precision welding, small deformation, beautiful weld.

技术参数 Technical Parameters

轴数据 / Axial data

型号 / Type number	FLASTEED-i5
轴数量 / Axis quantity	6
作业范围 / Scope of operation	1350mm
重复精度 / Repetition accuracy	+/-0.03mm

焊接电源 / Welding source

型号 / Type number	固体激光器(solid laser)/ mig,mag350
最大功率 / Maximum power	激光(Laser)3000w/ 3A-350A

尺寸和重量 / Dimension and weight

机床尺寸 / Machine tool	970mm*620mm*1205mm
重量 / Weight	160kg



FLASTEED-I5

i系列协作机器人

5KG
负载 / Load

24KG
重量 / Weight

±0.02mm
重复定位精度 / Reposition accuracy

886.5mm
工作半径 / Working radius

- ✓ **FLASTEED-i5**协作机器人可满足轻量化的作业需求
The FLASTEED-i5 collaborative robot meets the needs of lightweight operations
- ✓ **负载5kg, 最大工作半径886.5mm**
Load 5kg, maximum working radius 886.5mm
- ✓ **应用范围广泛, 配置丰富, 各关节均可实现±360°旋转**
Wide range of applications, rich configuration, each joint can achieve ±360° rotation



我们致力为客户提供安全, 可靠的协作机器人,

产品先后通过以下认证:

We are committed to provide customers safe and reliable collaborative robot products. We have reached below market standards and got certificates:

- 欧盟EN 认证 / EN ISO 13849-1:2015(PL=d, CAT 3)
- 欧盟CE认证 / Eu CE certification
- 北美认证 / North American certification
- 韩国KCs认证 / Korea KCs certification
- 中国CR认证 / China CR certification
- SEMI S2认证 / SEMI S2 certification
- 洁净度class5级 / Cleanliness class 5

部署灵活
Flexible Deployment

编程简易
Easy Programming

安全稳定
Safety Stability

模块化
Modularization

高精度
High Precision

柔性化生产
Flexible Production

应用广泛
Wide Applications

系统开放
Open Systems

高投资回报率
High return On investment

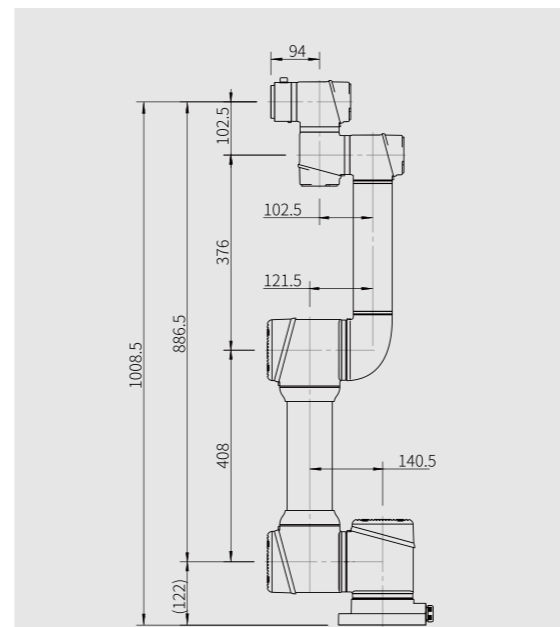
其他
Other



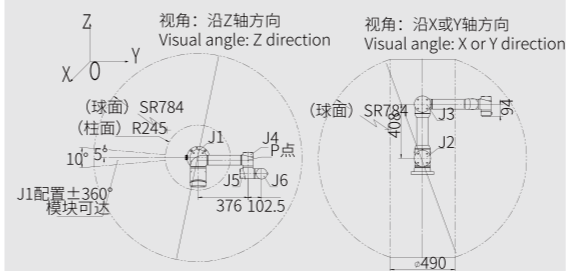
特性优点

Product Superiority

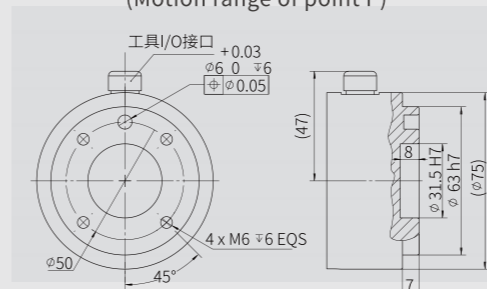
- 01 更安全 / More safe**
支持 10 级碰撞检测和传感器安全检测, 无需安全防护
Support level 10 collision detection and sensor safety detection, without security protection
- 02 更开放 / More open**
开放的系统平台, 支持SDK、API, 多种通讯方式, 可与多种末端治具、视觉、移动等外围设备建立通讯
Open system platform can support SKD, API and a variety of communication methods. It can establish communications with multiple end fixtures, peripheral devices like visual and mobile devices.
- 03 更精准 / More accurate**
重复定位精度可达±0.02mm, 可长时间连续完成高精度要求的工作, 大幅提高生产率具、视觉、移动等外围设备建立通讯
Reposition accuracy is up to ±0.02mm. It can continuously operate high-precision requirements for long time and improve the yield rate greatly.
- 04 更简单 / More simple**
可选择拖拽示教、坐标定位、路径规划、离线编程等多种方式操作机器人, 可视化界面简单易学
The robot can be operated by drag-and-drop teaching, coordinate setting, path planning, offline programming and other methods. The visual interface is simple and easy to learn
- 05 更广泛 / More applications**
可覆盖各行业差异性应用, 应用范围广泛
It has extensive use on various industries.



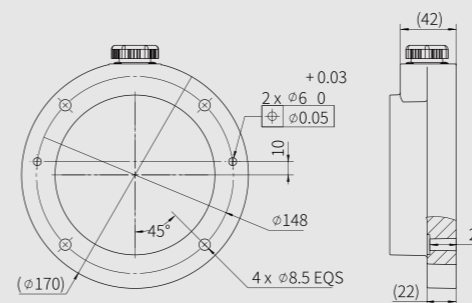
FLASTEED-i5 外形尺寸图 (Outline drawing)



FLASTEED-i5 本体P点运动范围 (Motion range of point P)



FLASTEED-i5 末端法兰 (End flange)



FLASTEED-i5 基座俯视图 (Top view of base)

机械臂 | Arm

自由度 Degree of freedom	6
最大工作半径 Maximum working radius (mm)	886.5
负载 Load (kg)	5
重量 Weight (kg)	24
安装面直径 Mounting diameter (mm)	Ø172
重复定位精度 Reposition accuracy	±0.02
工具速度 Tool speed (m/s)	≤3.4
平均功率 Average power (W)	200
峰值功率 Peak power (W)	2000
工作环境温度范围 Working Temperature (°C)	0-50
工作环境湿度 Working humidity (°C)	90% 相对湿度 (非冷凝)
	90% Relative humidity (non-condensing)
安装方式 Installation mode	任意角度 / Any angle
防护等级 Protection class	IP54
(ISO 14644-1) 洁净度 5级	5
(ISO 14644-1) Cleanliness class 5	



关节运动参数 | Joint motion parameter

	运动范围 (°) / Range of motion	最大速度 (°/s) / Maximum velocity
joint 1	±360	223
joint 2	±360	223
joint 3	±360	223
joint 4	±360	237
joint 5	±360	237
joint 6	±360	237

*各关节设计上具备±360度的旋转能力, 但是受限于应用场景, 部分关节可能达不到。实际使用中请加以注意。
*Each joint has designed for ±360 degree rotation capability. But due to application's limit, some joints may not reach its capability. Please pay attention to this in actual use.

控制柜 | Control box

产品型号 / Type number	AUBO-CB-M
控制柜尺寸 (长*宽*高) / Dimension	390mm*370mm*265mm (L * W * H)
重量 / Weight	15kg
连接机械臂线缆长度 / Arm cable length	5m (可定制, 最长8m / Customizable, up to 8m)
连接示教器线缆长度 / Teach pendant cable length	4m
连接电源线缆长度 / Power cable length	5m
通讯协议 / Communication protocol	Ethernet, Modbus-RTU/TCP, Profinet (选配 Matching)
接口与开放性 / Interface and openness	SDK (支持C/C++/C#/Lua/Python开发)、支持ROS系统、API SDK (support C/C++/C#/Lua/Python development), support ROS system, API
供电电源 / Power supply	100-240VAC, 50-60Hz
防护等级 / Protection class	IP43



控制柜 I/O; 工具端 I/O | Control box I/O; Tool I/O.

I/O 接口 / Interface	数字输入 / Digital input	控制柜 / Control box	数字输出 / Digital output	末端工具端 / Terminal end
数字输入 / Digital input	16 (Normal) / 16 (Safe)	16 (Normal) / 16 (Safe)	16 (Normal) / 16 (Safe)	4 (Assignable)
数字输出 / Digital output	16 (Normal) / 16 (Safe)	16 (Normal) / 16 (Safe)	16 (Normal) / 16 (Safe)	4 (Assignable)
模拟输入 / Analog input	4	4	4	2
模拟输出 / Analog output	4	4	4	-
I/O 电源 / Power supply	输出电压 / Output voltage	24V	输出电压 / Output voltage	0V/12V/24V
输出电流 / Output current	3A Max	3A Max	输出电流 / Output current	0.8A

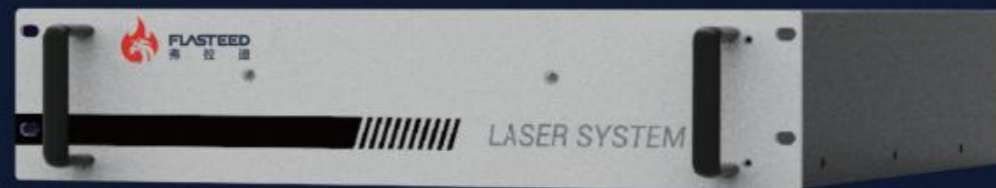
示教器 | Teach pendant

产品型号 / Type number	AUBO-TP
尺寸 / Dimension	355mm * 235mm * 54mm (L * W * H)
重量 / Weight	1.57kg
IP等级 / IP level	IP43
颜色 / Color	橙色+黑色 (Orange + Black)



光纤激光机器人焊接电源

弗拉迪光电闪电2000W光纤激光器 (BFL-CW2000)
Flasteed opto & lightning 2000W Fiber Laser (BFL-CW2000)



产品特点

Product features

- 1.拥有上佳的光束质量，激光光束可被聚焦到接近衍射极限，实现精密加工。
- 2.有连续和调制脉冲两种工作模式可选择，有效降低加工热影响区。
- 3.性能可靠，模块化全光纤设计，所有的光电器件被封装在坚固机壳内，能够承受严苛的工业应用条件。
- 4.可广泛应用于精密加工、3D打印、金属加工、电加工。
- 5.可加工各种钢材、铝基和镍基合金，钛合金，氧化铝陶瓷等。
- 6.拥有专业的激光应用工程师，竭诚为您提供优质的激光系统解决方案。

1. With excellent beam quality, the laser beam can be focused nearly to diffraction limit to achieve finish machining.
2. Continuous pulse and modulated pulse can be selected to effectively reduce the processing heat affected zone.
3. Reliable performance, modular all-fiber design, all photoelectric devices are packaged in a strong case, can withstand harsh industrial application conditions.
4. It can be widely used in finish machining, 3D printing, metal processing and electrical processing.
5. It can process various steel, Al-based alloys, Ni-based alloys, titanium alloys and alumina ceramics etc.
6. We have laser application engineers who will sincerely provide superior laser system solutions.

产品优势

Product Superiority

低成本, 免维护
Low cost, non-maintenance

上佳的功率稳定性
Excellent power stability

电光转化效率高
High electro-optical conversion efficiency

最大调制频率达5kHz
The maximum modulation frequency is 5kHz

简易的控制接口
Simple control interface

光束质量好, 适合精密加工
Good beam quality, suitable for precision machining

卓越的系统稳定性
Excellent system stability

简易的控制接口
Simple control interface



应用领域

Applications

- 家用电器 / Household Appliances
- 汽车制造 / Automobile Manufacturing
- 航天航空 / Aerospace
- 仪器仪表 / Instrument And Meter

产品技术指标

Product Technical Index

光学特性 / Optical properties

功率 / Power	2000W
波长范围 / Wave length	1080 ± 10nm
光纤芯径 / Optical fiber diameter	25 μm、50 μm
光缆长度 / Cable Length	15m或定制(15m or Customized)
输出连接器 / Output Connector	QBH或定制(QBHor Customized)
指示光 / Guiding Beam	红色(Red)
工作模式 / Operation Mode	连续或调制(Continuous or Modulated)
信振方向 / Signal Vibration Direction	随机(Random)
输出功率稳定度(25°C) / Output Power Stability	< ± 1.5%(2h)
功率调节范围 / Power Regulation Range	10%-100%
最大调制频率 / Max.Modulation Frequency	5kHz

机械尺寸及重量 / Mechanical dimensions and weights

重量 / Weight	<35Kg
外形尺寸 / Outline Dimension	100mm*482mm*506mm

电学特性 / Electrical properties

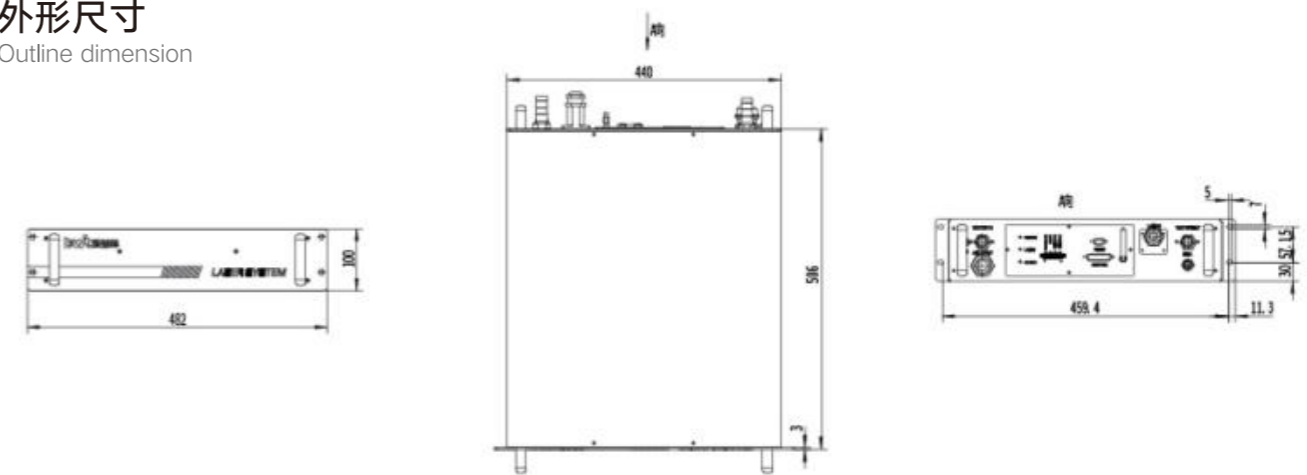
电压 / Voltage	220 ± 20V, ACPE, 50/60Hz
功耗 / Power Consumption	6.0kW
控制方式 / Control mode	RS232

水冷参数 / Water cooling parameter

制冷功率 / Water cooling power	4.5kW
设置温度 / Temperature Settings	25°C (激光模块Laser Module), 30°C (QBH)
水管尺寸 (外径) / Water Pipe Dimension (O.D)	φ 12mm
冷却水流量 / Cooling Water Flux	>20L/min
OBH冷却水流量 / OBH Cooling Water Flux	1.5~2.0L/min

外形尺寸

Outline dimension



MIG/MAG WELDING POWER SUPPLY

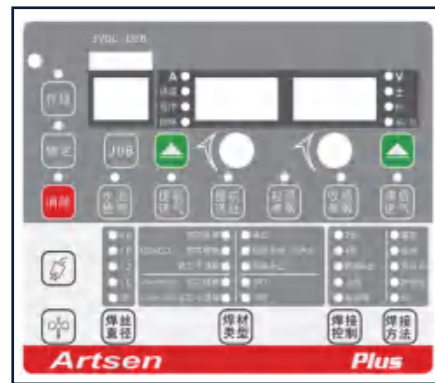
MIG/MAG机器人弧焊电源

产品特点

Product features

1. 稳定高速的硬件平台，开放智能的工艺软件系统，不断拓展迭代。
2. 不断超越你的工艺极限超高频逆变控制频率设计，高达1000KHz。
3. 采样零延时，精确响应熔滴过渡每一个状态创新的前面板。
4. UBS接口升级设置，处处快人一步。
5. 全新JOB模式，脉冲、直流随意切换。
6. 每种工艺单独可调，无缝切换合理的波形控制。
7. 小电流下可实现轻飞溅短路过渡，独有的短弧脉冲过渡工艺，大幅提升焊接效率。
8. 先进的铝焊功能，实现美观的鱼鳞纹焊缝。

1. Stable and high-speed hardware platform, open and intelligent process software system, continuous expansion and iteration.
2. Constantly exceed your technological limits, Ultra-high inverter control frequency design is up to 1000KHz.
3. Innovative front panel with zero sampling delay and accurate response to droplet transition in every state.
4. UBS interface upgrade Settings, one step faster everywhere.
5. New JOB mode, pulse and DC switch at will.
6. Each process can be adjusted separately, seamless switching and reasonable waveform control.
7. Small current can realize light splash short circuit transition, unique short arc pulse transition process, greatly improve the welding efficiency.
8. Advanced aluminum welding function can achieve beautiful fish scale weld.



产品参数表

Product parameters

机器人款 / Robot model	Ehave CM500HAR	Ehave CM500AR	Ehave CM400AR	Ehave CM500HAR
控制方式 / Control mode	全数字(All-digital)			
输入电压 / Input voltage	3相380伏交流电 (3 phase 380VAC) (±25%)			
输入频率 / Input frequency	30~80Hz			
输入容量 / Input capacity	24KVA	22.3KVA	24KVA	24KVA
功率因数 / Power factor	0.93	0.93	0.93	0.93
效率 / Efficiency	86%			
额定空载电压 / Rated no-load voltage	75V	73.3V	75V	75V
给定电流范围 / Given current range	30~500A	30~500A	30~500A	30~500A
给定电压范围 / Given voltage range	12~45V	12~45V	12~45V	12~45V
额定暂载率	100%@500A@40°C	60%@500A@40°C/ 60%@500A@40°C	60%@350A@40°C/ 100%@350A@25°C	100%@400A@40°C
Rated transient load				
电磁兼容性 / Electromagnetic Compatibility	EN 60974-10:2014.			
防雷等级 / Lightning protection class	Class D(6000V/3000A)			
焊接时序 / Welding sequence	无收弧、有收弧、反复收弧、点焊(No arc, arc, repeated arc, spot welding)			
电弧特性 / Arc characteristic	-9~+9			
焊机参数通道存储 / Weld parameters storage channel	默认10组(Default 10 groups)			
机器人通讯(仅限机器人焊机) / Robot communications (Robot welder only)	模拟(Simulation) CAN			
预置通讯口 / Preset communication port	智能风冷(Intelligent air cooling)			
冷却方式 / Cooling mode	1.4 ~24m/min			
送丝速度 / Wire feed speed	H			
绝缘等级 / Insulation class	IP23S			
防护等级 / Protection class	工业重载(Industrial heavy duty)、-39°C~+50°C			
主机环境 / Host environment	300*480*620mm			
体积 / Volume	55kg	55kg	55kg	55kg
重量 / Weight				
焊接工艺 / Technology	焊接材料 / Material	焊丝直径(mm) / Diameter	焊接气体 / Gas	
直流CO ₂ /MAG(DC CO ₂ /MAG)	实心碳钢(Solid carbon steel)	1.0/1.2/1.6	100%CO ₂	
	碳钢药芯(Flux-cored carbon steel)	1.2/1.6	80%Ar+20%CO ₂	
	非碳钢药芯(Flux-cored non-carbon steel)	1.2/1.6		
直流MMA (DC MMA)	电焊条(Electrode)	-	-	